

**SEMICONDUCTOR DEVICE INCLUDING JUNCTION DIODE CONTACTING  
CONTACT-ANTIFUSE UNIT COMPRISING SILICIDE**

**RELATED APPLICATIONS**

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This application is related to Herner, US Application No. ✓, "Use in  
Semiconductor Devices of Dielectric Antifuses Grown on Silicide," (attorney docket  
number MA-070-1) filed on even date herewith and hereby incorporated by reference.

**BACKGROUND OF THE INVENTION**

[0001] The invention relates to a novel combination of a junction diode and a contact-antifuse unit containing a silicide layer.

[0002] While a junction diode in electrical contact with an antifuse layer can be used effectively as a memory cell, the performance of such cells can be improved.

**SUMMARY OF THE INVENTION**

[0003] The present invention is defined by the following claims, and nothing in this section should be taken as a limitation on those claims. In general, the invention is directed to a novel combination of a junction diode and a contact-antifuse structure comprising a silicide and an antifuse layer.

[0004] A first aspect of the invention provides for a semiconductor device comprising a vertically oriented junction diode; a contact-antifuse unit, the unit comprising an antifuse layer and a layer of silicide, the antifuse layer on and in contact with the silicide layer, wherein the contact-antifuse unit is in contact with an electrode of the junction diode.

[0005] Another aspect of the invention provides for a semiconductor device comprising a vertically oriented junction diode; a contact-antifuse unit comprising a